

ABSTRACT

A method for fabricating a transistor in a semiconductor device is disclosed. An example method forms an isolation region in a semiconductor substrate and sequentially deposits a pad oxide layer, a pad nitride layer and a first oxide layer on the substrate and the isolation region. The example method also patterns the first oxide layer and pad nitride layer to form a gate electrode, deposits a doped polysilicon layer, forms a doped polysilicon sidewall on the pad nitride layer and the first oxide layer, etches the pad oxide layer, sequentially deposits and planarizing a gate isolation layer, a gate nitride layer and a metal layer on the substrate to form the gate electrode. In addition, the example method forms a source, a drain, a gate plug, a source plug and a drain plug, respectively.